CHAPTER IV
RESEARCH FINDINGS AND DISCUSSION

A. Description of Research Findings

This research was used experimental design. Subjects of the research are divided into experimental class and control class. Experimental class got a treatment vocabularies related to public places using Hangaroo Game. Then, for the control class the researcher teach vocabularies used conventional method.

Before giving the treatment, the experimental and control class should have the same ability. It is used to know that there is no significance difference between them. Then, the researcher did similarity test of variant in both classes. It is called homogeneity test. Beside homogeneity test, the researcher also did normality test for the classes.

The data of research are got from the result of the test as follow:

1. Analysis of Try Out Test

   It was stated in chapter three that to get good instruments which are used for collecting the data, the try-out test was chosen. This test was done in class V C. The result of the try-out test was analyzed statistically to know the validity, reliability, difficulty level and discriminating power.

Multiple Choice Test

a. Validity of Instruments

It is obtained that from 40 multiple choice test items; there are 21 test items which are valid and 19 test items which are invalid. The items are invalid because the computation result of their r_{xy} value (the correlation of score each item) is lower than their r table value.

The following is the analysis of validity item number 1, the complete calculation can be read from the appendix.

Table 4.1
The Computation of Item Validity for Item of Multiple Choice Test

No.	Code	Item	Score	Y2	XY
1	T-24	1	39	1521	39
2	T-37	1	39	1521	39
3	T-25	1	39	1521	39
4	T-28	1	37	1369	37
5	T-13	1	37	1369	37
6	T-3	1	37	1369	37
7	T-2	1	36	1296	36
8	T-17	1	36	1296	36
9	T-26	1	36	1296	36
10	T-11	1	35	1225	35
11	T-15	1	34	1156	34
12	T-9	1	34	1156	34
13	T-16	0	34	1156	0
14	T-1	1	34	1156	34

No.	Code	Item	Score	Y2	XY
15	T-7	0	34	1156	0
16	T-20	1	32	1024	32
17	T-21	1	32	1024	32
18	T-27	1	32	1024	32
19	T-19	1	31	961	31
20	T-6	1	30	900	30
21	T-4	1	28	784	28
22	T-18	1	28	784	28
23	T-14	0	28	784	0
24	T-5	1	26	676	26
25	T-23	1	22	484	22
26	T-12	1	21	441	21
27	T-8	0	18	324	0
28	T-10	0	15	225	0
Total		23	884	28998	755

Based on the table:

Mp = 32.83

Mt = 31.57

P = 0.82

Q = 0.18

St = 6.4

$$\gamma_{pbi} = \frac{32,83 - 31,57}{6,4}\sqrt{\frac{0,82}{0,18}} = 0,424$$

From tables of r_{xy}, for α = 5 % with N = 28, it would be obtained 0.349. Because $r_{count} > r_{table}$, so the item number 1 is valid.

b. Reliability of Instruments

After validity items had been done, the next analysis was to test the reliability of instrument. It was done to find out whether a test had higher critical score and gave the stability or consistency of the test scores or not.

S^2 = 40.3280

n = 40

$\sum pq$ = 6.3533

4

$$r_{11} = \left(\frac{40}{40 - 1}\right)\left(\frac{40{,}3280 - 6{,}3533}{40{,}3280}\right)$$

$$= 0{,}8641$$

The result shows that 0.8641 is more than 0.8, it means that the reliability of instrument were very high.

c. Difficulty Level of Instruments

The following is the computation of the level difficulty for item number 1 and for the other items would use the same formula.

$$P = \frac{23}{28} = 0{,}82$$

So, the difficulty level of item number 1 is easy.

d. Discriminating Power of Instruments

The discrimination power of an item indicated the extent of the item which can discriminate between the tests, separating the more able tests from the less able. To do this analysis, the number of try-out subjects was divided into two groups, upper and lower groups.

B_A = 13 B_B = 10

J_A = 14 J_B = 14

$$D = \frac{13}{14} - \frac{10}{14} = \frac{3}{14} = 0{,}214$$

Because of the result is between 0.21 – 0.40. So the item number 1 is satisfactory.

2. Analysis of Pre-requisite Test

Before the writer determines the sample, the writer should conduct a homogeneity test by choosing two classes with cluster random sampling. They are between class V A (experimental class) and V B (control class) as the sample. This test is conducted to determine whether the samples are homogenous or not. In this case, the writer gave the test to the students that consist of 20 items of test. After conducted the test, data analysis was carried out to find out the homogeneity of the sample.

Table 4.2
Pretest Score of Experimental Class and Control Class

NO	EXPERIMENTAL CLASS		NO	CONTROL CLASS	
	CODE	X		CODE	X
1	E-1	75	1	C-1	45
2	E-2	65	2	C-2	45
3	E-3	70	3	C-3	70
4	E-4	85	4	C-4	65
5	E-5	65	5	C-5	55
6	E-6	70	6	C-6	60
7	E-7	65	7	C-7	55
8	E-8	70	8	C-8	75
9	E-9	65	9	C-9	65
10	E-10	60	10	C-10	70
11	E-11	75	11	C-11	50
12	E-12	70	12	C-12	55
13	E-13	60	13	C-13	65
14	E-14	70	14	C-14	70
15	E-15	50	15	C-15	50
16	E-16	70	16	C-16	65
17	E-17	75	17	C-17	60
18	E-18	85	18	C-18	60
19	E-19	70	19	C-19	80
20	E-20	80	20	C-20	70
21	E-21	60	21	C-21	65
22	E-22	75	22	C-22	85
23	E-23	90	23	C-23	80

24	E-24	70	24	C-24	55
25	E-25	70	25	C-25	90
26	E-26	50	26	C-26	45
27	E-27	60	27	C-27	60
28	E-28	50	28	C-28	50

a. Normality Test of Class V A

Test of normality was used to find out whether the data of experimental and control class which had been collected from the research come from normal distribution or not. To obtain the point, the researcher found out the computation results of Chi-quadrate (x^2_{score}) then was compared with table of Chi-quadrate (x^2_{table}) by using 5% alpha of significance. If $x^2_{score} < x^2_{table}$ meant that the data spread of research result distributed normally.

Based on the result of pretest of Class V A, before researcher taught them using Hangaroo Game, the highest score achieved is 90 and lowest is 50. It means that the range (R) is 40, the number of class is 6, and the interval of the class is 6.70. The standard deviation (S) is 9.59. The result of the calculation above is, then inputted into the frequency distribution as follow:

Table 4.3
The Frequency Distribution of Experimental Class (Pretest)

No.	Class Interval			Class Limit	Z Class Limit	P (Zi)	Large Class for Z	Ei	Oi	$(Oi-Ei)^2$ / Ei
1	50,00	-	56,00	49,50	-2,27	0,4883	0,0504	1,6	2	0,0937
2	57,00	-	63,00	56,50	-1,54	0,4380	0,1475	4,7	8	2,2799
3	64,00	-	70,00	63,50	-0,81	0,2905	0,2593	8,3	10	0,03490
4	71,00	-	77,00	70,50	-0,08	0,0312	0,2739	8,8	4	2,5896
5	78,00	-	84,00	77,50	-0,65	0,2427	0,1738	5,6	3	1,1787
6	85,00	-	91,00	84,50	-1,38	0,4165	0,0662	2,1	1	0,5900
				91,50	2,11	0,4826				
x^2									=	7,08

By using the computation in the Chi-quadrate table (x^2_{table}) for 5% alpha of significance with dk = 6 - 1 = 5, it was found (x^2_{table}) =11.07.

Because of $x^2_{score} < x^2_{table}$ (7.08< 11.07), so the initial data of experimental class distributed normally.

b. Normality Test of Class V B

While from the result of V B students in control class was found that the maximum score is 90 and minimal score is 45. The stretches of score in the class were 45. The number of class is 6, and the interval of the class is 7.54. The standard deviation is 12.13. So, the result of the calculation above is, then inputted into the frequency distribution as follow:

Table 4.4
The Frequency Distribution of Control Class
(Pretest)

No.	Class Interval			Class Limit	Z for Class Limit	P (Zi)	Large Class for Z(Ld)	Ei	Oi	(Oi-Ei)² / Ei
1	45,00	-	52,00	44,50	-1,53	0,4371	0,1289	4,1	6	0,8536
2	53,00	-	60,00	52,50	-0,87	0,3082	0,2243	7,2	8	0,0944
3	61,00	-	68,00	60,50	-0,21	0,0839	0,2566	8,2	5	0,2564
4	69,00	-	76,00	68,50	-0,45	0,1727	0,1931	6,2	5	0,2249
5	77,00	-	84,00	76,50	1,11	0,3658	0,0955	3,1	2	0,3651
6	85,00	-	92,00	84,50	1,77	0,4613	0,0310	1,0	2	1,0199
				92,50	2,43	0,4924				
x^2									28	3,81

By using the computation in the Chi-quadrate table (x^2 table) for 5% alpha of significance with dk = 6 - 1 = 5, it was found (x^2 table) =11.07.

Because of x^2 score < x^2 table (3,81< 11.07), so the initial data of control class distributed normally.

c. Homogeneity Test

The homogeneity test is one of crucial stages done in this research. This was done to know whether sample in the research come from population that had same variance or not. The analysis of homogeneity test could be seen in the table below.

Table 4.5
The Homogeneity Test (Pretest)

Variant Source	Experimental Class	Control Class
Sum	1890	1760
Mean	67,5	62,857
S^2	86,11111	145,2381
n	28	28

The formula is:

$$F = \frac{Vb}{Vk} = \frac{145{,}2381}{86{,}11111} = 1{,}687$$

With α = 5% and dk_1= (28-1 = 27) : (28-1 = 27), obtained F_{table} = 1.905. Because F_{count} is lower than F_{table} (1,687 < 1,905). So, the two groups have the same variant/ homogeneous.

3. Analysis of Post-test

Post-test for both experimental class and control class was given on September 26th 2014. Researcher conducted post-test after all treatments were done. Hangaroo game was used as the media to facilitate teaching vocabulary in experimental class. While for students in control class, they were treated without Hangaroo game. The post-test purposed to measure students' achievements on vocabulary after they received treatments.

Table 4.6
Posttest Score of Experimental Class and Control Class

NO	EXPERIMENTAL CLASS		NO	CONTROL CLASS	
	CODE	X		CODE	X
1	E-1	95	1	C-1	65
2	E-2	90	2	C-2	60
3	E-3	85	3	C-3	70
4	E-4	100	4	C-4	85
5	E-5	85	5	C-5	60
6	E-6	95	6	C-6	65
7	E-7	85	7	C-7	75
8	E-8	85	8	C-8	75
9	E-9	80	9	C-9	80
10	E-10	65	10	C-10	85
11	E-11	90	11	C-11	70
12	E-12	85	12	C-12	65
13	E-13	85	13	C-13	85
14	E-14	90	14	C-14	75
15	E-15	65	15	C-15	60
16	E-16	100	16	C-16	65
17	E-17	75	17	C-17	70
18	E-18	85	18	C-18	80
19	E-19	85	19	C-19	95
20	E-20	80	20	C-20	80
21	E-21	80	21	C-21	85
22	E-22	90	22	C-22	100
23	E-23	80	23	C-23	85
24	E-24	70	24	C-24	90
25	E-25	85	25	C-25	90
26	E-26	75	26	C-26	70
27	E-27	75	27	C-27	70
28	E-28	85	28	C-28	75
Mean		83,75	Mean		76,07

a. Normality Test of Class V A

In the posttest, the researcher also did test of normality. Based on the result of posttest of Class V A, after researcher taught them using Hangaroo Game, the highest score which is achieved 100 and the lowest is 65. It means that the range (R) 35, the number of class 6, the interval of the class 6.06 and the standard deviation (S) 9.04. The result of the calculation above is inputted into the frequency distribution as follow:

Table 4.7
The Frequency Distribution of Experimental Class (Posttest)

No.	Class Interval			Class Limit	Z for Class Limit	P (Zi)	Large Class for Z(Ld)	Ei	Oi	$(Oi-Ei)^2$ / Ei
1	65,00	-	70,00	64,50	-2,16	0,4845	0,0521	1,7	3	1,0630
2	71,00	-	76,00	70,50	-1,49	0,4324	0,1357	4,3	3	0,4147
3	77,00	-	82,00	76,50	-0,83	0,2967	0,2308	7,4	4	1,5518
4	83,00	-	88,00	82,50	-0,17	0,0659	0,2567	8,2	10	1,3888
5	89,00	-	94,00	88,50	0,50	0,1907	0,1866	6,0	4	0,6511
6	95,00	-	100,00	94,50	1,16	0,3774	0,0887	2,8	4	0,4753
				100,50	1,83	0,4661				
x^2									28	4,54

By using the computation in the Chi-quadrate table (x^2_{table}) for 5% alpha of significance with dk = 6 - 1 = 5, it was found (x^2_{table}) =11.07.

Because of $x^2_{score} < x^2_{table}$ (4,54 <11.07), so the initial data of experimental class distributed normally.

b. Normality Test of Class V B

The researcher also did test of normality for Class V B. Based on the posttest, the highest score which is achieved 100 and the lowest is 60. It means that the range (R) 40, the number of class 6, the interval of the class is 5.97 and the standard deviation (S) 10.73. The result of the calculation above is inputted into the frequency distribution as follow:

Table 4.8
The Frequency Distribution of Control Class (Posttest)

No	Class Interval			Class Limit	Z for Class Limit	P (Zi)	Large Class for Z(Ld)	Ei	Oi	$\frac{(Oi-Ei)^2}{Ei}$
1	60,00	-	66,00	59,50	-1,54	0,4380	0,1258	4,0	7	2,1900
2	67,00	-	73,00	66,50	-0,89	0,3120	0,2166	7,0	5	0,5899
3	74,00	-	80,00	73,50	-0,23	0,0921	0,2506	8,1	7	0,1621
4	81,00	-	87,00	80,50	0,42	0,1625	0,1949	6,3	5	0,2529
5	88,00	-	94,00	87,50	1,07	0,3581	0,1019	3,2	2	0,4415
6	95,00	-	101,00	94,50	1,72	0,4577	0,0358	1,1	2	0,7959
				101,50	2,38	0,4913				
x^2									28	4,43

By using the computation in the Chi-quadrate table (x^2_{table}) for 5% alpha of significance with dk = 6 - 1 = 5, it was found (x^2_{table}) =11.07.

Because of $x^2_{score} < x^2_{table}$ (4.43 < 11.07), so the initial data of experimental class distributed normally.

c. Homogeneity Test

The homogeneity test is also done for posttest. The analysis of homogeneity test could be seen in the below table.

Table 4.10 The Homogeneity Test (Posttest)

Variant Source	Experimental Class	Control Class
Sum	2345	2130
Mean	83,750	76,071
S^2	78,935	119,180
N	28	28

The formula is :

$$F = \frac{Vb}{Vk} = \frac{119{,}18}{78{,}935} = 1{,}510$$

With α = 5% and dk_1= (28-1 = 27) : (28-1 = 27), obtained F_{table} = 1.905. Because F_{count} is lower than F_{table} (1.510 < 1.905). So, the two groups have the same variant/ homogeneous.

B. Hypothesis Test

1. The similarity of Pretest

This hypothesis test used Two Tail Test, the hypothesis is:

Ho : $\mu_1 = \mu_2$

Ha : $\mu_1 \neq \mu_2$

So, the t-test formula:

$$t = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} = \frac{67{,}5 - 62{,}86}{\sqrt{\frac{86{,}11}{28} + \frac{145{,}25}{28}}}$$

$$= \frac{4{,}64}{\sqrt{3{,}07 + 5{,}19}} = \frac{4{,}64}{\sqrt{8{,}26}}$$

$$= \frac{4{,}64}{2{,}87} = 1{,}615$$

Using α = 5% and dk = 28+28-2= 54, obtained t table = 2.00, because t_{count} is lower than t_{table} (1,615 < 2.00). So, it could be concluded that there is no significance of difference between the experimental and control group. It means that both experimental and control class had same condition before getting treatments.

2. The Significant Difference of Posttest

The computation of posttest showed that both experimental and control class are homogeneous. So, the t-test formula:

$$t = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} = \frac{83{,}75 - 76{,}07}{\sqrt{\frac{78{,}94}{28} + \frac{119{,}18}{28}}}$$

$$= \frac{7{,}68}{\sqrt{2{,}82 + 4{,}26}} = \frac{7{,}68}{\sqrt{7{,}08}}$$

$$= \frac{7{,}68}{2{,}66} = 2{,}887$$

Using α = 5% and dk = 28+28-2 = 54, obtained t_{table} = 1,671, because t_{count} is higher than t_{table} (2,887 > 1,671). So, it could be concluded that there is significance of difference between the experimental and control group. It means that experimental progressed than control class after getting treatments.

C. Summary of Research Findings

1. Score of Pretest

The calculation of normality test showed that experimental class and control class are distributed normally. The homogeneity test data on the pretest was also homogeneous. It can be said that the ability condition of the students before the treatments is similar.

2. Score of Posttest

Based on the results of the data analysis, in the experimental class showed that the highest value was 100 and the lowest value is 65, while the control class highest score was 100 and the lowest score was 60.

From the results of hypothesis test obtained that t = 2.887, while the prices for standard error t_{table} 5 % with df = 54 table = 1,671. It showed $t_{count} > t_{table}$. So, there was a significance difference between the results learning process of the experimental class with control group. These results are also based on the average score of post-test students. The average score of the experimental class which was taught

using learning model Hangaroo Game 83.75 is better than the average score of the control 76.07. This suggests that students who are taught using Hangaroo Game have higher learning outcomes.

From the description of results above, It can be concluded that the model of learning with Hangaroo Games gives positive effect on the students learning outcomes. So, learning English, especially mastering vocabulary by using the model Hangaroo Games can be used as an alternative.

From the results of research conducted by the researcher, the use of Hangaroo Games can stimulate students to focus and more active in learning activities. Students are eager to follow the learning process. It showed that students are interested in using Hangaroo Games.

Although the data from the study showed positive results in the implementation Hangaroo Games, there are some lacks as follows:

a. Students will be gambling

   In teaching using hangaroo game, the students who face a difficulty to answer the questions will gamble by just guessing the answer.

b. Difficult for teacher in preparing Hangaroo game

   It is difficult for teacher in preparing hangaroo game that is uncreative, because this game demands the

teacher to be creative to make clues as the question to answer.

c. It is difficult for teacher to manage their students in each group when they are playing this game.

D. Limitations of Research

Researchers realized that this study did not maximize optimally, there were some barriers faced during the process. Some limitations of this research are:

1. The research was limited at SD BUQ Betengan Demak and only used class V A and class V B as sample, so that when the similar research is conducted in other school. It is still possible that different result will be gained.
2. This research is implemented in short time. It makes this research could not be done maximally. But it was enough to fulfill all requirements for a research.
3. Because of the lacks of experience from the writer, the implementation of this research was less smooth. But the writer tries to do this study as optimally as possible accordance with guide from advisors.

Considering all those limitations, there is a need to do more research related Hangaroo Games in the next. In the hope of be greater and more successful in developing English teaching-learning.